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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,591	03/10/2004	Toshimitsu Hirai	9319S-000727	4716

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EXAMINER

NGAMPA, BRIGET P

ART UNIT	PAPER NUMBER
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1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/797,591

Applicant(s)

HIRAI ET AL.

Examiner

Briget P. Ngampa

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 14-20 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/07, 7/06, 6/04, 3/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

Detailed Action

1. Applicant's election without traverse of claim 1-8, 10, 14-20 in the reply filed on 10/11/2007 is acknowledged.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. (patent number 5,670,205 hereafter '205).

With respect to claim 1, '205 teaches a pattern forming method for forming a film pattern such as seen on figure 7B by arranging droplets of a liquid material (ink) on a substrate (frame, 10c), the method comprising: a first step of forming a central part of the film pattern on the substrate using the droplets (40b); a second step of forming one side with respect to the formed central part (40a); and a third step of forming the other side with respect to the formed central part (40c).

With respect to claim 2 which contains the limitation of claim 1, '205 teaches the droplets are arranged on the substrate so that the droplets [(ink dots) 40a, 40b, 40c and 40d] overlap with at least a part of the central part [40a and 40c overlap 40b] formed on the substrate [10c, frame] to form the sides (fig 7, b).

With respect to claim 3 which contains all the limitations of claim 1, '205 teaches forming the sides using a plurality of droplets comprises: a first arrangement step of arranging the plurality of droplets not to overlap with one another on the substrate [fig 7, (42a-d, ink)]; and a second arrangement step of arranging droplets between the plurality of droplets [40a-d] arranged on the substrate [10c] using the first arrangement step.

With respect to claim 4 which contains the limitation of claim 1, '205 teaches that the arrangement conditions of the droplets in the first, second, and third steps are set differently, since the droplets are set at different positions, therefore different arrangement must have been require in order to eject the droplet at different position.

With respect to claim 6 which contains the limitation of claim 4, '205 teaches that in figure 7B droplets, each have the second volume smaller that the first volume sprayed [col 10, lines 66-67]. Therefore the volumes of the droplets in the first [40a] vs. [42a], second [40b] vs. [42b], and third steps [40c] vs. [42c] are set to different values.

3. Claims 1, 2, 4, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Pan (patent number 6,501,663, hereafter '663).

With respect to claim 1, '663 teaches a pattern forming method for forming a film pattern such as seen on figure 15 by arranging droplets of a liquid material (electrically conductive droplets, droplets (110) on a substrate (electronic devices 121 and 103,)), the method comprising: a first step of forming a central part of the film pattern (153) on the substrate using the droplets; a second step of forming one side with respect to the formed central part (155); and a third step of forming the other side with respect to the formed central part (157), [col 10, lines 15-20].

With respect to claim 2 which contains the limitation of claim 1, '663 teaches the droplets are arranged on the substrate so that the droplets overlap with at least a part of the central part formed on the substrate [fig 15] to form the sides.

With respect to claim 4 which contains the limitation of claim 1, '663 teaches that the arrangement conditions of the droplets in the first, second, and third steps are set differently, since the droplets are set at different positions, therefore different arrangement must have been require in order to eject the droplet at different position

With respect to claim 8 '663 teaches that the droplets are electrically conductive in order to form an interconnect.

With respect to claim 10 '663 teaches a method of manufacturing a device having a wiring pattern (interconnect system) comprising a material arrangement step of

arranging droplets of a liquid material on a substrate, wherein the material arrangement step comprises: a first step of forming a central part (fig 15, 153) of the wiring pattern on the substrate using the droplets; a second step of forming one side with respect to the formed central part (fig 15, 155); and a third step of forming the other side with respect to the formed central part (fig 15, 157).

5. Claims 14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Akahira (patent number 6,145,981, hereafter '981).

With respect to claim 14, '981 teaches pattern forming method for forming a film pattern by arranging droplets of a liquid material on a substrate [fig 16B], the method comprising: a first step of discharging a first plurality of the droplets in an elongated central part of the film pattern on the substrate [fig 15, 53]; a second step of discharging a second plurality of the droplets along a first side of the formed central part [fig 16B, 1] the second plurality of the droplets partially overlapping the formed central part (2 with respect to 1); and a third step of discharging a third plurality of the droplets (3) along a second side of the formed central part (3 with respect to 2), the third plurality of the droplets partially overlapping the formed central part (3 with respect to 1) on figure 16B.

With respect to claim 15, '981 teach the first step further comprises: discharging a first set of linearly spaced apart first droplets on the substrate (fig 16B, 1); and thereafter discharging a second set of linearly spaced apart second droplets (FIG 16B,

20 on the substrate (53), the second droplets filling in gaps between the first droplets(2 is placed between ones).

With respect to claim 16 '981 further teach the second step further comprises: discharging a third set of linearly spaced apart third droplets along the first side of the formed central part; and thereafter discharging a fourth set of linearly spaced apart fourth droplets along the first side of the formed central part, the fourth droplets filling in gaps between the third droplets [fig 16B].

With respect to claim 17, '981 further teach pattern forming method of claim 16 and the third droplets partially overlap the first droplets; and the fourth droplets partially overlap the second droplets [fig 16B].

With respect to claim 18, '981 teaches the pattern forming method of claim 16 and the third step further comprises: discharging a fifth set of linearly spaced apart fifth droplets along the second side of the formed central part; and thereafter discharging a sixth set of linearly spaced apart sixth droplets along the second side of the formed central part, the sixth droplets filling in gaps between the fifth droplets [fig 16B].

With respect to claim 19, '981 teach pattern forming method of claim 18 further, the fifth droplets partially overlap the first droplets; and the sixth droplets partially overlap the second droplets [Fig 16B].

With respect to claim 20, '981 teach the pattern forming method of claim 19 further the third droplets partially overlap the first droplets; and the fourth droplets partially overlap the second droplets [fig 16B].

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (patent number 5,670,205 hereafter '205) as applied to claims 1-6 above, and further in view of Akahira et al. (patent number 6,179,400 B1, hereafter '400).

With respect to claim 5 which contains the limitation of claim 4, '205 do not teach the arrangement intervals of the droplets on the substrate in the first, second, and third steps are set to different values. '400 teaches that when plurality of ink dots are discharged, the interval between dots B and C, and dots C and D are increased [col 20 lines 48-50], [fig 12](if the interval is increase therefore they are different) to avoid large white omissions and color mixture. It would have been obvious to one of ordinary skill in the art at the time of the invention to have increased the interval of discharge to avoid large white omission and color mixture.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyazaki et al. (patent number 5,670,205 hereafter '205) as applied to claim 1 above and further in view of Ohtsu et al. (U.S. patent number 6,720,119, hereafter '119).

With respect to claim 7, '205 teaches the pattern forming method according to Claim 1 but '205 does not specifically teach a surface treatment step of adjusting a lyophobic property of the surface of the substrate before arranging the droplets on the substrate. '119 teach that hydrophilicity and hydrophobicity (lyophobicity) processing of the layer receiving the ink is carried out then sprays ink into the hydrophilic portion to obtain color filters [background]. It would have been obvious to one of ordinary skill in the art at the time of the invention to have performed a surface treatment step of '119 to obtain the color filter of '205 because '119 teaches that it is a suitable method to obtain color filters.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Briget P. Ngampa whose telephone number is 571-270-1866. The examiner can normally be reached on M-F, 830-4:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

bpn


MICHAEL CLEVELAND
SUPERVISORY PATENT EXAMINER